

# **Defense Medical Epidemiology Database (DMED) Users Guide**

Version 3.6

Prepared by the  
**Army Medical Surveillance Activity**

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## Introduction

### General Overview

The Defense Medical Surveillance System (DMSS) is the corporate executive information system for medical surveillance decision support in the EI/DS business area of the Military Health System (MHS). The DMSS receives and integrates standardized data from multiple individual Service and DoD sources worldwide. The "engine" of the DMSS is a continuously growing relational database of up-to-date and historical data related to medical events (e.g., hospitalizations, outpatient visits, reportable diseases, HIV results, health risk appraisals, immunizations, deaths), personal characteristics (e.g., rank, military occupation, demographic factors), and military experiences (e.g., deployments, assignments) of all Army, Navy, Air Force, and Marine service members over their entire military careers. There are currently more than 150 million rows of data regarding more than 7.5 million service members in the on-line DMSS database.

The Defense Medical Epidemiology Database (DMED) application provides authorized users worldwide (through the Internet) with real-time access to user-definable queries of a subset of data (non-privacy) contained within the DMSS. The DMED application (version 3.6) can be downloaded from the Army Medical Surveillance Activity's (AMSA) home page (<http://amsa.army.mil>).

The purpose of the DMED is to standardize the epidemiologic methodology used to collect, integrate and analyze Tri-Service personnel and medical event data and to provide authorized users with remote access to the summarized data.

Through the use of client-server technologies and database optimization, DMED users have unprecedented capabilities to access Tri-Service epidemiologic data and to submit tailored queries that are responded to in a timely (seconds) and efficient manner.

DMED is available to all military and civilian researchers, policy makers and others with a need to evaluate the health of active duty service members.

### What's new

- Addition of 2003 current year data.

## Key Information

### Data Sources

DMED provides remote access to a subset of data contained within the Defense Medical Surveillance System (DMSS). DMSS contains up-to-date and historical data on diseases and medical events (e.g., hospitalizations, ambulatory visits, reportable diseases, Immunizations, HIV tests, etc.) and longitudinal data relevant to personnel characteristics and deployments experience for all active duty and reserve component service members. The DMED application provides a user-friendly interface through which users may perform queries regarding disease and injury rates and relative burdens of disease in active duty populations.

DMED provides access to four types of data relevant to active duty service members: demographic data, inpatient hospitalization data, ambulatory data, and reportable events data.

**Demographic data** (i.e., gender, race, marital status, pay grade, etc.) are provided by the Defense Manpower Data Center (DMDC). DMDC receives updated data on a monthly basis on each Service.

**Hospitalization data** are provided by the Executive Information and Decision Support (EI/DS) Program Office. These data are a subset of information from the Standard Inpatient Data Record (SIDR), which records inpatient treatment data. SIDR data are collected by the Composite Health Care System (CHCS) at each DoD Medical Treatment Facility (MTF). For each hospitalization of an active duty Service member in an U.S. military hospital, at the time of discharge, up to eight diagnoses are recorded (using standard diagnostic codes, International Classification of Diseases, 9th revision). The first diagnosis is generally indicative of the primary reason for admission and is the diagnosis code that is reflected in the DMED data.

**Ambulatory data** are provided by the Executive Information and Decision Support (EI/DS) Program Office. These data are a subset of information from the Standard Ambulatory Data Record (SADR), which records patient-level outpatient treatment data generated by the MTFs. For each outpatient visit of an active duty Service member up to four diagnoses are recorded (using standard diagnostic codes, International Classification of Diseases, 9th revision).

**Reportable Event data** contains information on 70 reportable medical events. This data is reported to the DMSS by the Services' Medical Surveillance Centers. Army reportable event data for calendar years 1995 to present, and Navy and Air Force data from calendar years 2000 to present are available in DMSS.

**Disclaimer**

The Defense Medical Surveillance System (DMSS) is an executive information decision support system whose database contains up-to-date and historical data on diseases, medical events (e.g., hospitalizations, ambulatory visits, reportable diseases, HIV tests, immunizations and health risk appraisals) and longitudinal demographic data on DoD personnel. Data in DMSS originates from many different sources within the DoD. DMED (version 3.6) provides authorized users comprehensive remote access to a subset of non-privacy data contained within the DMSS.

The overall quality of medical surveillance data depends on completeness, validity, consistency, timeliness and accuracy. With over 150 million rows of data (from more than 20 different sources) currently in DMSS, much effort is made to ensure a standardized and consistent approach to data processing and validation. However, receipt of large data inputs from multiple sources makes it impractical to correct all inaccurate or miscoded records. The following are known characteristics of the data available through DMED.

***Population Statistics:***

All data on DoD service members contained in DMSS is validated against DoD personnel data obtained from the Defense Manpower Data Center (DMDC). Stratum data elements (i.e., gender, age, grade, race/ethnic, and marital status) for a medical event are derived from personnel data considered to be current on the date of a medical event. Overall and stratum-specific population statistics (i.e., person-year denominators) are calculated based on longitudinal personnel data. Stratum-specific unknown (or missing) data are excluded from all calculations.

***In-patient Data:***

In-patient data for calendar years 1990 - 2001 and monthly data for calendar years 2002 and 2003 are obtained from the Standard In-patient Data Record (SIDR) extracted from the Composite Health Care System (CHCS) used in DoD Military Treatment facilities worldwide. CHCS exists primarily as an administrative medical database, but it allows tracking of frequencies, rates, and trends of disease and injury diagnoses in military populations. Each medical record is coded with up to eight diagnoses and is based on the health care provider's review and interpretation of results of tests, consults, and diagnostic and therapeutic procedures. Only those in-patient records considered complete are processed into DMSS.

***Ambulatory Data:***

Out-patient data for calendar years 1997 - 2001 and monthly data for calendar years 2002 and 2003 are obtained from the Standard Ambulatory Data Record (SADR) extracted from the Ambulatory Data System (ADS) and the Composite Health Care System (CHCS) used in DoD Military Treatment facilities worldwide. ADS exists primarily as an administrative medical database, but it allows tracking of frequencies, rates, and trends of disease and injury diagnoses in military populations. Each medical record is coded with up to four diagnoses chosen from a list of relevant diagnoses for specific clinics. Clinic staff fill-out patient encounter information (including diagnosis) onto forms that are scanned into the ADS database. Only those out-patient records considered complete are processed into DMSS.

***Reportable Event Data:***

Medical events meeting DoD reporting requirements are transmitted within each Service to a central location by Service-specific reporting programs. These programs exist to compile a reportable event surveillance database used to record and track events of interest in the military. Criteria (below) were formulated by each Service to establish a consensus list of DoD reportable events. Army reportable event data for calendar years 1995 to present, and Navy and Air Force data from calendar years 2000 to present are available in DMSS.

**Criteria for the Selection of Reportable Medical Events**

- First, there must be a clear case definition and a single standard code (in the International Classification of Diseases, 9th revision);
- Second, an intervention must be available and/or a public health response indicated;
- Third, a sufficient, timely source of information must not already exist; and
- Fourth, the condition/event must:

represent an inherent, significant threat to the public's health (e.g., potential to affect large numbers of people, to be efficiently transmitted within a population, to have severe/life threatening clinical manifestations); OR

represent a significant military operational threat (e.g., potential to disrupt military training, deployment, or operations); OR

be commonly reportable by state or federal laws, regulations, or guidelines.

## Information about query results

### Switching tabs

Results tabs for Disease Summary and Detailed Queries will have five sub-tabs (see Figure 1):

**Counts** - displays the count of the cases for the population substrata selected. These are the numerators of the rate calculations.

**Person Years** – displays the cumulative person years of experience during the calendar years of interest of all members of the population substrata selected. These are the denominators of the rate calculations.

**Rates** - displays rates of occurrence of cases (rounded to 2 significant digits) for the population substrata selected.

**Line Chart** - graphs the rates in line chart format.

**Bar Chart** - graphs the rates in bar chart format.

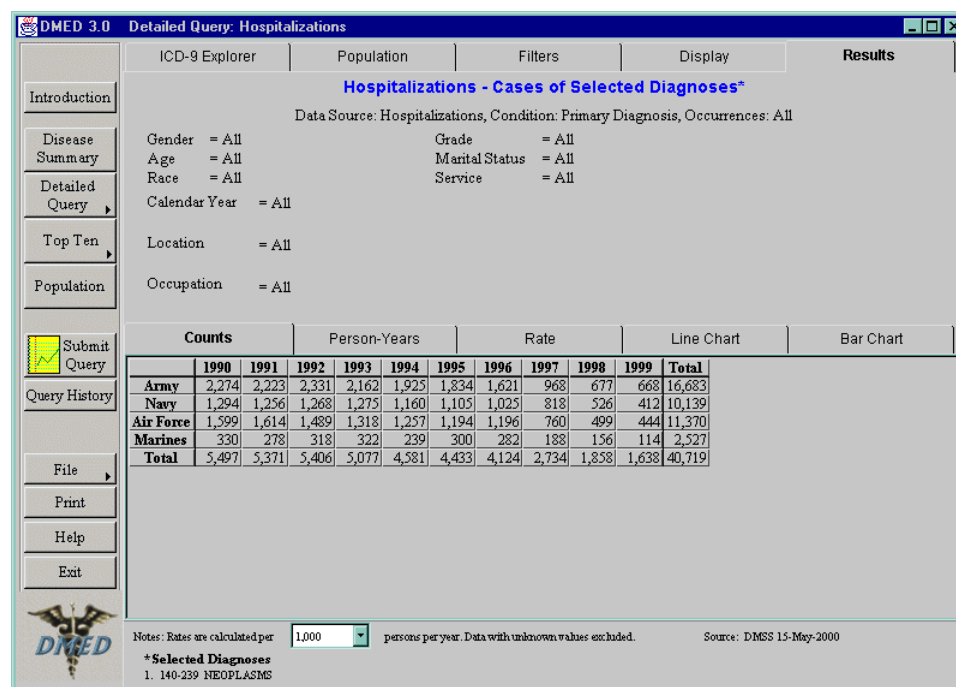


Figure 1.

## Changing rate calculations

All rates in DMED query results are calculated per thousand persons per year and rounded to two decimal places. When a rate is calculated to less than .01 per 1000, the displayed rate as <0.01. In such instances, an exact rate can be manually calculated by dividing the relevant count(s) by the corresponding person-time(s). The formula is:

$$\text{Rate} = \text{counts} / \text{person-time} * 1000$$

DMED provides the ability to change the scale of the rate calculation through the drop down box located at the bottom of the **Results** tab (see Figure 2).

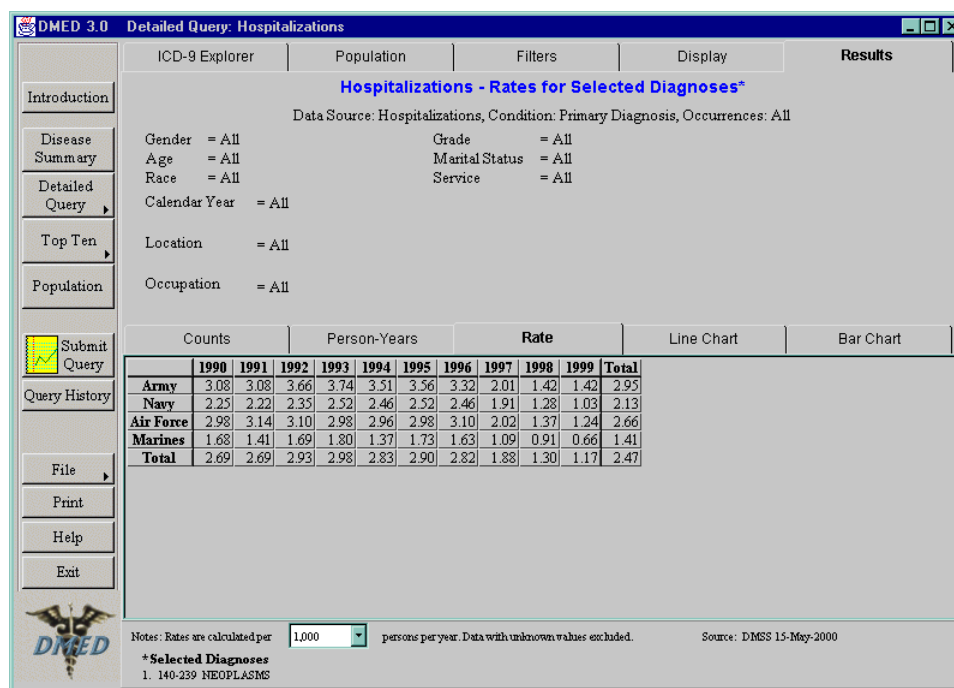


Figure 2.

## Unknown / missing data

Unknown values are included in calculations for strata where **All** is selected. However, unknown values are not included in calculations for strata where multiple discrete values are selected.

## Small cell counts

DMED summarizes experiences of groups of individuals. It does not provide access to individual patient (Privacy Act) information. Because of this, DMED requires a minimum of 10 person years per table cell in order to calculate results. If less than 10 person years of data are available, results are not totaled and \*\* is displayed in the appropriate cell in the table (see Figure 3).

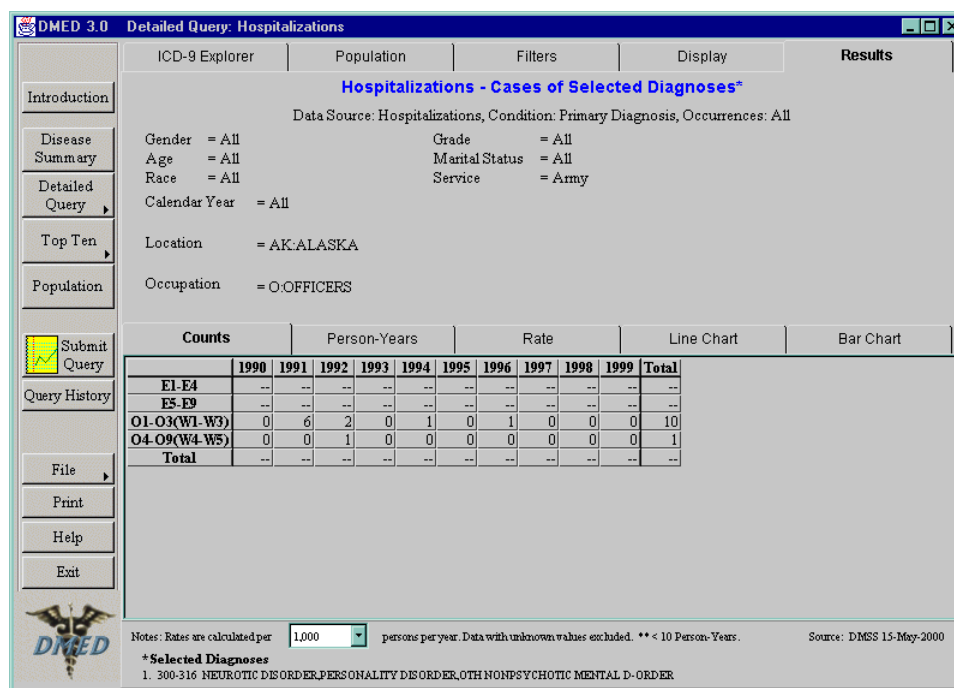


Figure 3.

## Login / Password Information

### Forgot password

If you have forgotten your user id or password contact the DMED administrator via email at [dmedadm@amsa.army.mil](mailto:dmedadm@amsa.army.mil).

## Updates / New Releases

DMED tables are periodically updated as new data is received. This may cause query results to change slightly.

You will be notified when an update to an existing version of the software is available. Should this situation occur, a message will appear when you log on to DMED. Generally, updates are of two types: *mandatory* and *optional*.



## Getting Started with DMED

### ***Types of Queries***

There are four different types of queries possible with DMED. Within each query there are multiple filters and other functions to customize each query.

**Disease Summary** Displays all available hospitalization, ambulatory and reportable event data on a particular condition(s) in a specified population. Not all filters and display options are available with '*Disease Summary*'. However, the user can easily jump from the '*Disease Summary*' query to a more detailed 'full-featured' query.

**Detailed Query** Provides data separately on hospitalizations, ambulatory data and reportable events. The user can filter the request to include all occurrences of a particular condition or just the first occurrence (eliminates multiple encounters for the same condition).

**Top Ten Diagnoses** Displays the ten most commonly occurring medical encounters (in-patient, out-patient or reportable event) for specified populations. For hospitalization and ambulatory data queries, a filter is available to limit the scope to one or all of the major ICD-9 diagnostic categories. As with '*Detailed Query*', population filters for location and occupational groups are available to define more specifically the population of interest

**Population Statistics** Provides demographic data on a specified active duty population. Allow quick filtering of location and occupational groups to more specifically define the population of interest. The results of this query are also available on the results tab of the '*Disease Summary*' and '*Detailed Query*'.

### **Data Sources**

There are four main sources of data available through DMED. Refer to the '*DMED Disclaimer*' for additional information on these data sources.

**Population Data** All data on DoD service members contained in DMSS is validated against DoD personnel data and obtained from the Defense Manpower Data Center (DMDC) on a monthly basis. Stratum data elements (i.e., gender, age, grade, race/ethnic, and marital status) for medical events are derived from personnel data considered to be current on the date of a medical event.

**In-patient Data** In-patient data for calendar years 1990 - 2001 and monthly data from calendar years 2002 and 2003 are obtained from the Standard In-patient Data Record (SIDR), which is extracted from the Composite Health Care System (CHCS) used in DoD Military Treatment Facilities worldwide. Each medical record is coded with up to eight diagnoses and is based on the health care provider's review and interpretation of results of tests, consults, and diagnostic and therapeutic procedures.

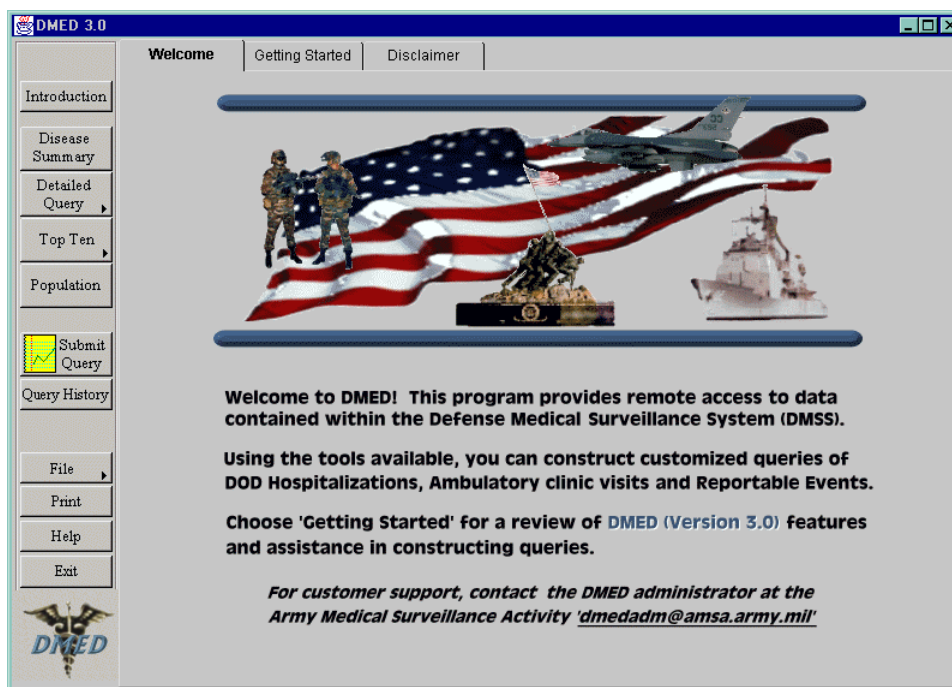
**Ambulatory Data** Out-patient data for calendar years 1997 - 2001 and monthly data from calendar years 2002 and 2003 are obtained from the Standard Ambulatory Data Record (SADR) which is extracted from the Ambulatory Data System (ADS) and the Composite Health Care System (CHCS) used in DoD Military Treatment Facilities worldwide. Each medical record is coded with up to four diagnoses chosen from a list of relevant diagnoses for specific clinics.

**Reportable Event Data** Medical events meeting DoD reporting requirements are transmitted within each Service to a central location by Service-specific reporting programs. These programs exist to compile a reportable event surveillance database used to record and track events of interest in the military. Currently, Army reportable event data for calendar years 1995 to present, and Navy and Air Force data from calendar years 2000 to present are available in DMSS.

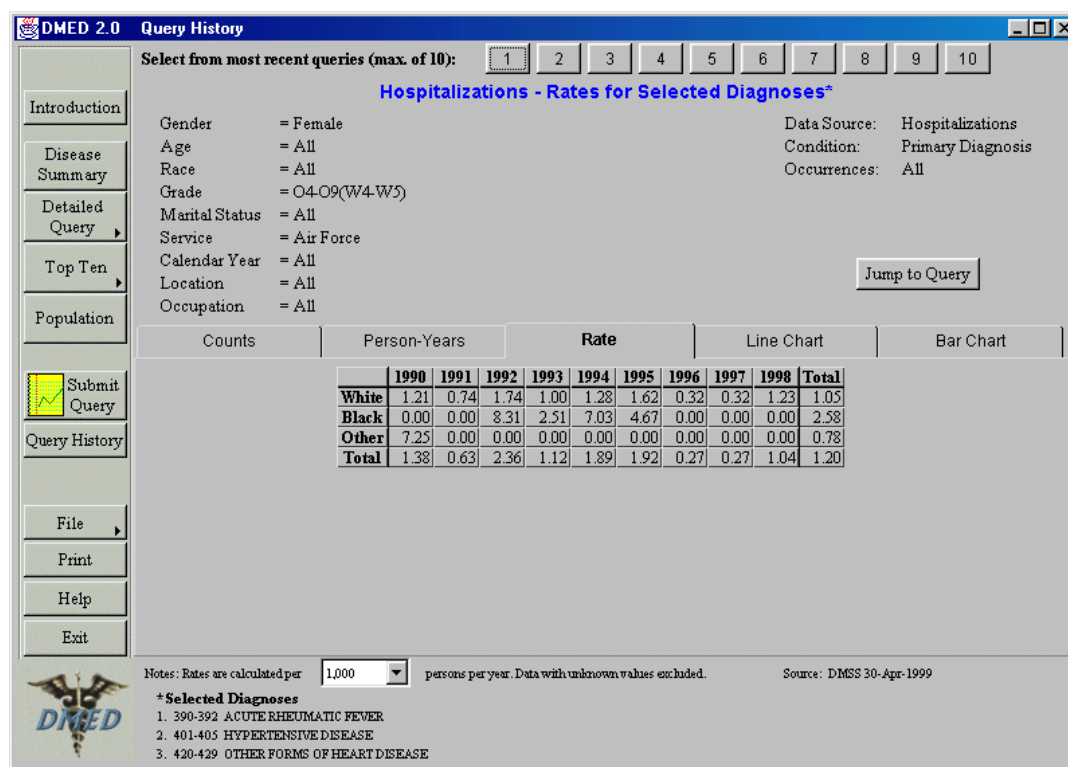
## Application overview

**Program Functions** The main functions of DMED can be accessed through buttons located vertically down the left side of the screen. Select the button for the type of function you would like to perform. Buttons with drop down menus (e.g., '*Detailed Query*' and '*Top Ten Query*') are indicated with an arrow

1. **Customizing Queries** To facilitate creating a query, each query screen is set up as a series of tabs (e.g., ICD-9 Explorer, Population, Filters, Display, Results). Move left to right through the tabs to select the desired information on each tab. One or more population values can be selected independently. Location and occupational group filters allow the user to specifically define the population of interest. One or more location and occupational group values can be selected (maximum of five selection for each). Choose how the rates are calculated by selecting the x-axis and by-value from the radio buttons in the display tab.



2. **Submit Query** When you are ready to submit your query to the database, click the Submit Query button on the left side of the screen. The results of your query will appear on the Results tab. For more complex queries involving specific selections of Location(s) and/or Occupational Groups, more time may be needed to execute your query, approximately 1 - 3 minutes. At this time, you will be prompted with a dialog box with this information. You may choose to continue or cancel your query. In addition, you can choose to disable the dialog box for future queries. Figure 4.
  
3. **Displaying Results** Results can be displayed as a table of counts of the medical events chosen, or as calculated rates. Disease rates can be displayed in either tabular or graphic format. Population statistics (person-years) are also available on the results screen. Current year results will display as counts only.



## Supplemental Information

1. **Query History** Retains the ten most recent queries you have performed during a session. Access the query history function through the Query History button on the left side of the screen. The Query History screen will display the results of the most recently run query. There will be numbered buttons across the top allowing you to select up to ten previously performed queries. Each Query History screen has a 'Jump to Query' button, which will take you to the full query.
2. **Saving query results** Query results can be saved to a file and reactivated in DMED at a later date. Query results can also be exported for use in spreadsheet programs such as EXCEL. Access these options through the File button on the left side of the screen.
3. **Printing query results** Any results screen can also be printed directly from DMED by clicking the Print button. The displayed results selected will appear on the printout. Choose landscape mode to view the entire printout.
4. **Export Data** Results from queries can be exported into a text file, which can be easily imported into Excel or other data management software.

## Disease Summary

### Overview

The Disease Summary feature gives the user the opportunity to view all surveillance data (hospitalizations, ambulatory, reportable events) available for a particular condition.

### Choose diagnosis of interest

The user may select up to 15 ICD-9 code(s) or ranges of codes from the **ICD-9 Explorer** tab. The ICD-9 Explorer is a tree structure of ICD-9 codes.

Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select codes or code ranges by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected Codes** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code (see Figure 6).

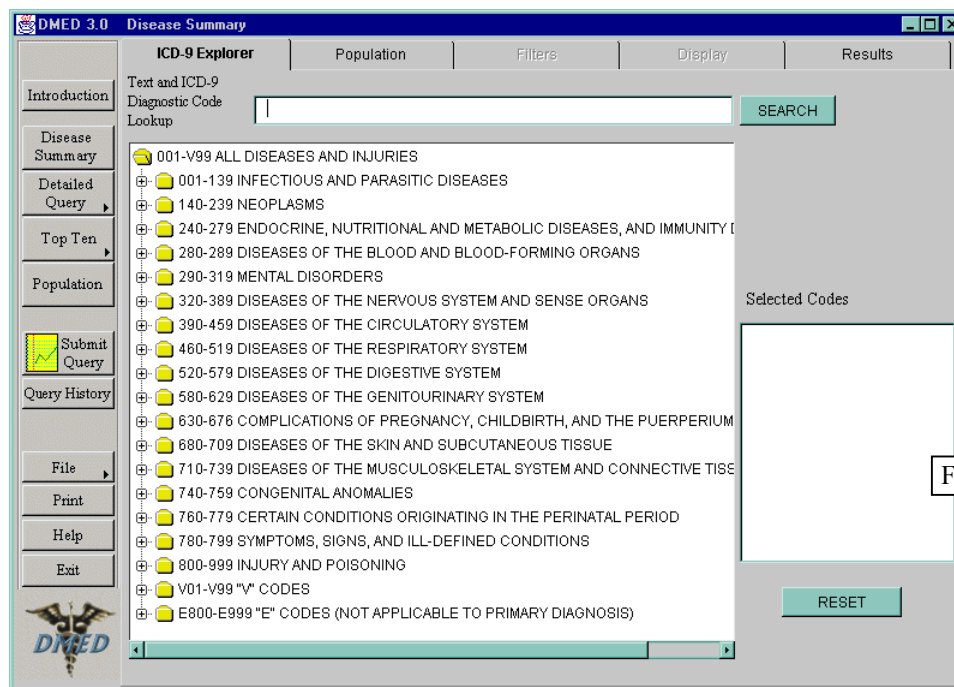


Figure 6.

The ICD-9 Explorer also has a search function enabling you to search by code or text. Type the code or text string you desire in the **Lookup** box on the top of the screen and click on the **Search** button. The desired item will be outlined. Click the left mouse button to select the outlined item. To clear all selections and begin over, click on the **Reset** button.

## Choose population of interest

First, select the **Population** tab. Selectable strata include Gender, Age, Race, Grade, and Marital Status. Service and Calendar Year strata along with the Location and Occupational Group (in the **filter** tab) are not selectable for Disease Summary queries. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item. At least one stratum must be set to **All** and one other must be set to **All** or multiple values (see Figure 7).

DMED 3.0 Disease Summary

ICD-9 Explorer | **Population** | Filters | Display | Results

1) Choose Service(s)

Service	<input type="checkbox"/> Army	<input type="checkbox"/> Navy	<input type="checkbox"/> Air Force	<input type="checkbox"/> Marines	<input checked="" type="checkbox"/> All
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2) Choose Demographics

Gender	Age	Race	Grade	Marital Status
<input type="checkbox"/> Male	<input type="checkbox"/> <20	<input type="checkbox"/> White	<input type="checkbox"/> E1-E4	<input type="checkbox"/> Single
<input type="checkbox"/> Female	<input type="checkbox"/> 20-24	<input type="checkbox"/> Black	<input type="checkbox"/> E5-E9	<input type="checkbox"/> Married
<input checked="" type="checkbox"/> All	<input type="checkbox"/> 25-29	<input type="checkbox"/> Other	<input type="checkbox"/> O1-O3(W1-W3)	<input type="checkbox"/> Other
	<input type="checkbox"/> 30-34	<input checked="" type="checkbox"/> All	<input type="checkbox"/> O4-O9(W4-W5)	<input checked="" type="checkbox"/> All
	<input type="checkbox"/> 35-39		<input checked="" type="checkbox"/> All	
	<input type="checkbox"/> >=40			
	<input checked="" type="checkbox"/> All			

3.) Time (Current Year or Previous Years)

Time	Calendar Year
<input checked="" type="radio"/> Previous Years	<input type="checkbox"/> 1990 <input type="checkbox"/> 1992 <input type="checkbox"/> 1994 <input type="checkbox"/> 1996 <input type="checkbox"/> 1998 <input checked="" type="checkbox"/> All
<input type="radio"/> Current Year (counts only)	<input type="checkbox"/> 1991 <input type="checkbox"/> 1993 <input type="checkbox"/> 1995 <input type="checkbox"/> 1997 <input type="checkbox"/> 1999

RESET

Figure 7.

## Submit Query

Click the **Submit Query** button.

## Results Screen options

The **Results** tab is automatically displayed after a query is submitted.

Three main **Result** tabs will appear - one for each type of data: Hospitalizations, Ambulatory Data and Reportable Events).

Within each of the **Result** tabs there are five additional tabs (see Figure)

**Counts** - displays the count of the cases for the population substrata selected.

These are the numerators of the rate calculations.

**Person Years** – displays the cumulative person years of experience during the calendar years of interest of all members of the population substrata selected.

These are the denominators of the rate calculations.

**Rates** - displays rates of occurrence of cases (rounded to 2 significant digits) for the population substrata selected.

**Line Chart** - graphs the rates in line chart format.

**Bar Chart** - graphs the rates in bar chart format.

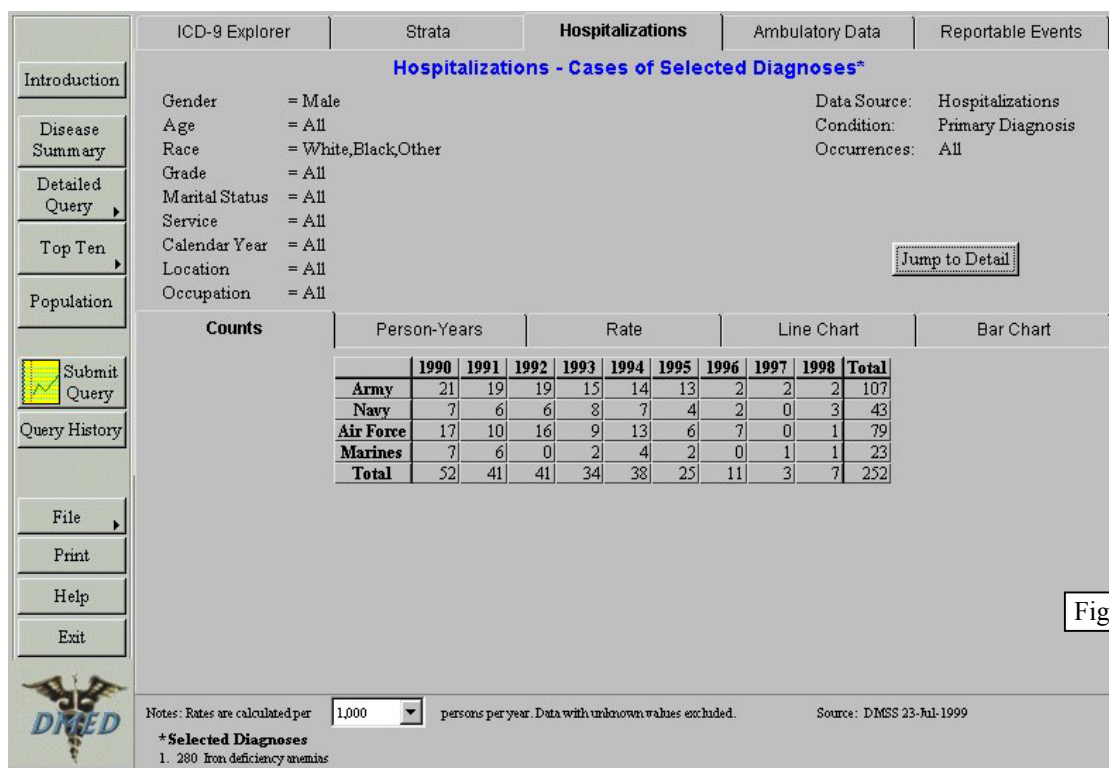


Figure 8.

Each Results tab has a **Jump To Detail** button (see Figure 8 above), which will bring the user to the appropriate Detailed Query.



Figure 9.

Results will not display on the Reportable tab if the condition chosen is not one of the required reportable events (see Figure 9)



## Detailed Query

### *Hospitalization data query*

#### Overview

In-patient data for calendar years 1990 – 2001 and monthly data from calendar years 2002 and 2003 is obtained from the Standard In-patient Data Record (SIDR), which is extracted from the Composite Health Care System (CHCS) used in DoD Military Treatment facilities worldwide. CHCS exists primarily as an administrative medical database, but it allows tracking of frequencies, rates, and trends of disease and injury diagnoses in military populations. Each medical record is coded with up to eight diagnoses and is based on the health care provider's review and interpretation of results of tests, consults, and diagnostic and therapeutic procedures. Only those in-patient records considered complete are processed into DMSS.

Choose the **Detailed Query** button. Choose **Hospitalizations** from the drop down menu (see Figure 10).

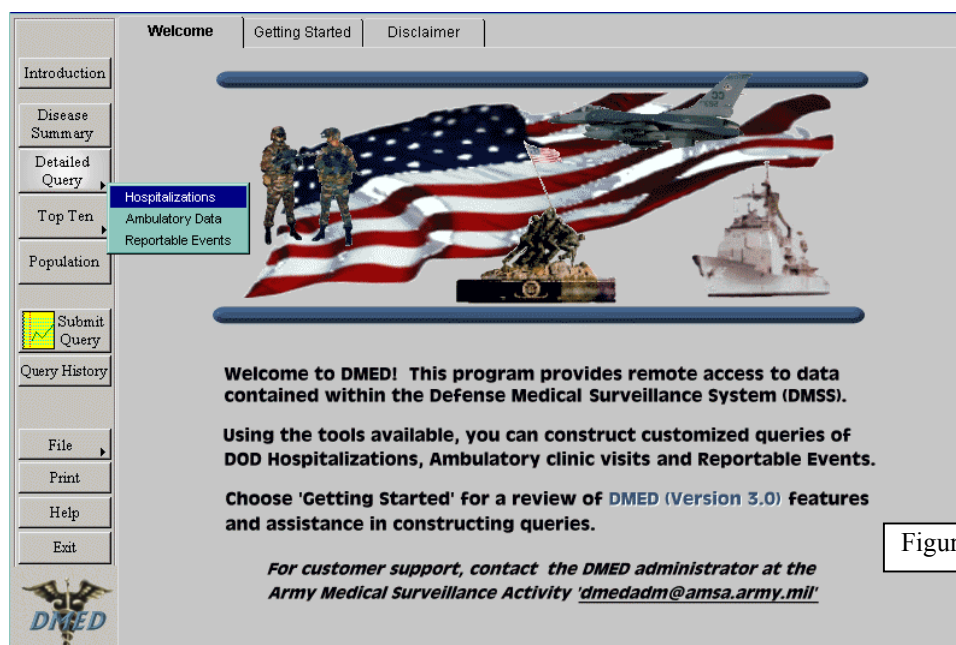


Figure 10.

## Choose diagnosis of interest

The user may select up to 15 ICD-9 code(s) or ranges of codes from the **ICD-9 Explorer** tab. The ICD-9 Explorer is a tree structure of ICD-9 codes.

Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select codes or code ranges by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected Codes** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code.

The ICD-9 Explorer also has a search function enabling you to search by code or text. Type the code or text string you desire in the **Lookup** box on the top of the screen and click on the **Search** button. The desired item will be outlined. Click the left mouse button to select the outlined item. To clear all selections and begin over, click on the **Reset** button.

## Decide which fields to search

Select the Diagnosis Fields to Search. 'Any of Top Three Diagnoses' and 'Any Diagnosis' can only be selected with a single ICD-9 code (i.e. a lowest level code that has no sub codes beneath it). (See Figure 11).

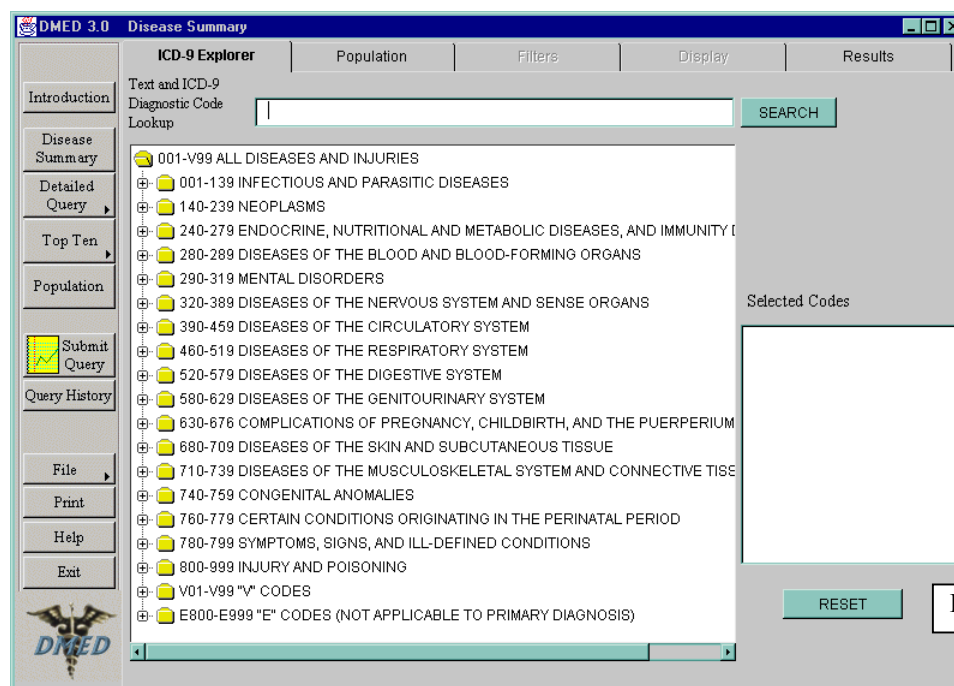


Figure 11.

## Choose population of interest

First, select the **Population** tab. Strata include Service, Gender, Age, Race, Grade, Marital Status and Calendar Year. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item. At least one stratum must be set to **All** and one other must be set to **All** or multiple values (see Figure 12).

DMED 3.0 Disease Summary

ICD-9 Explorer   **Population**   Filters   Display   Results

1) Choose Service(s)

Service   ☐ Army   ☐ Navy   ☐ Air Force   ☐ Marines   ☒ All

2) Choose Demographics

Gender	Age	Race	Grade	Marital Status
<input type="checkbox"/> Male	<input type="checkbox"/> <20	<input type="checkbox"/> White	<input type="checkbox"/> E1-E4	<input type="checkbox"/> Single
<input type="checkbox"/> Female	<input type="checkbox"/> 20-24	<input type="checkbox"/> Black	<input type="checkbox"/> E5-E9	<input type="checkbox"/> Married
<input checked="" type="checkbox"/> All	<input type="checkbox"/> 25-29	<input type="checkbox"/> Other	<input type="checkbox"/> O1-O3(W1-W3)	<input type="checkbox"/> Other
	<input type="checkbox"/> 30-34	<input checked="" type="checkbox"/> All	<input type="checkbox"/> O4-O9(W4-W5)	<input checked="" type="checkbox"/> All
	<input type="checkbox"/> 35-39		<input checked="" type="checkbox"/> All	
	<input type="checkbox"/> >=40			
	<input checked="" type="checkbox"/> All			

3.) Time (Current Year or Previous Years)

Time  
☒ Previous Years  
☐ Current Year (counts only)

Calendar Year  
☐ 1990   ☐ 1992   ☐ 1994   ☐ 1996   ☐ 1998   ☒ All  
☐ 1991   ☐ 1993   ☐ 1995   ☐ 1997   ☐ 1999

RESET

Figure 12.

## Select filters

First, select the **Filter** tab. The user may select up to five locations and five occupations from the **Filter** tab. Both the Location and Occupation explorer are laid out in a tree structure. Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select location or occupation by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code.

DMED will default to “All Locations” and “All Occupation Groups” unless otherwise specified. To clear your selections, click on the reset button (see figure 13).

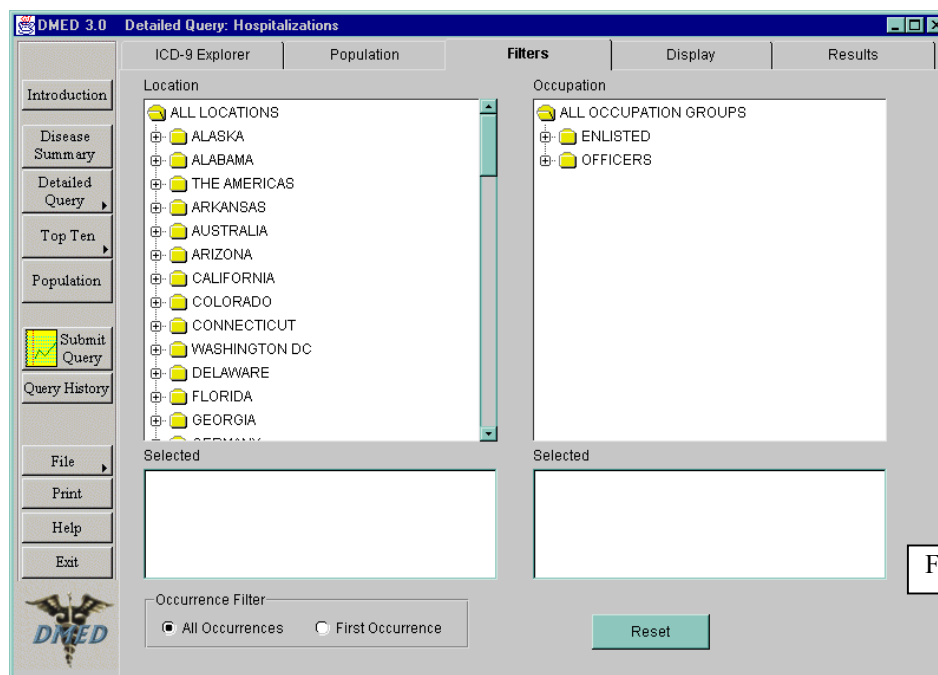


Figure 13.

### Decide first vs. all occurrences

Select 'All Occurrences' or 'First Occurrence'. First Occurrence Rates are calculated using only the first documented hospitalizations for specific conditions of interest (since 1990). Thus, if an individual was hospitalized for the same condition more than once (since 1990), only the first occurrence would be counted. To optimize response times, 'First Occurrence' queries are restricted to single three, four or five digit ICD-9 codes. Thus, ranges of codes and multiple code selections are not allowed.

### Choose display options

First, select the **Display** tab. Next, select the *X*-axis and “*By Value*” variables. The *X*-axis options include all strata for which you selected **All**. Your *By Value* options are any strata for which you selected **All** or multiple values. The same variable cannot be used to define the *X* axis and *By Values*. To set the strata values back to the defaults, click on the **Reset** button. A sample line chart will display the layout of your *X* and *By-value* (see Figure 14 on next page...).

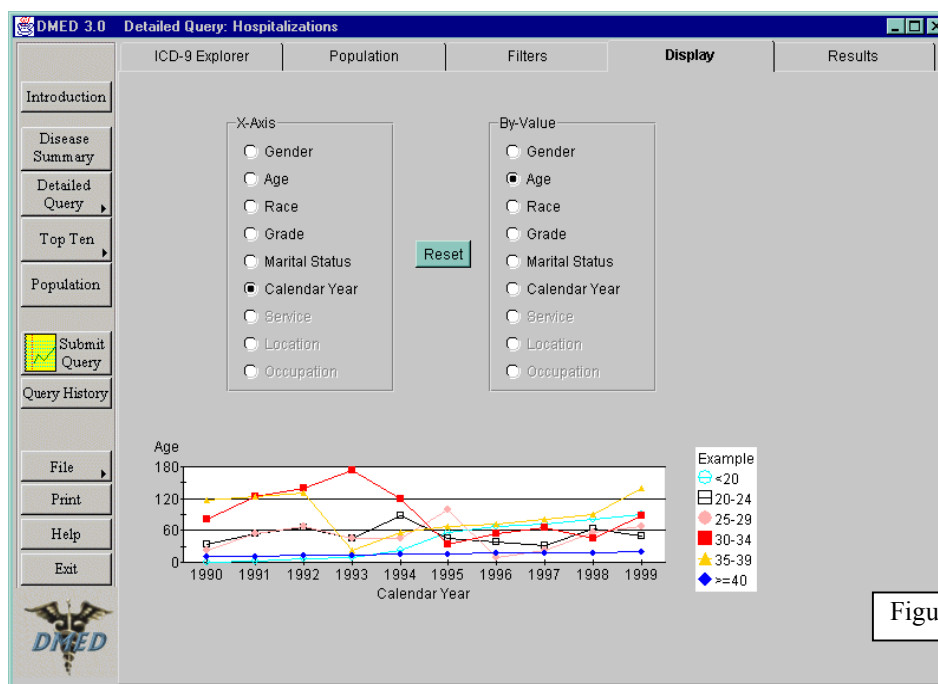


Figure 14.

### Submit Query

Click the **Submit Query** button.

### Results Screen options

The **Results** tab is automatically displayed after a query is submitted.

The **Results** tab contains five sub-tabs (see Figure 15 on next page...).

**Counts** - displays the count of the cases for the population substrata selected. These are the numerators of the rate calculations.

**Person Years** – displays the cumulative person years of experience during the calendar years of interest of all members of the population substrata selected. These are the denominators of the rate calculations.

**Rates** - displays rates of occurrence of cases (rounded to 2 significant digits) for the population substrata selected.

**Line Chart** - graphs the rates in line chart format.

**Bar Chart** - graphs the rates in bar chart format.

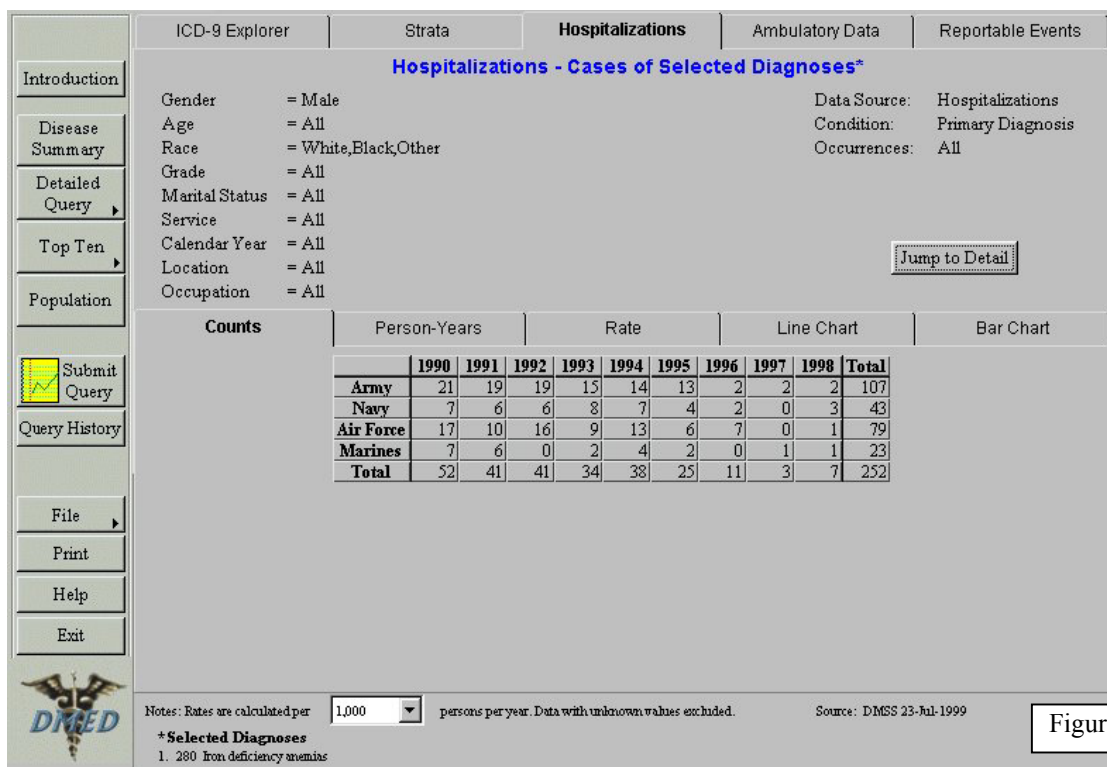


Figure 15.

## Ambulatory Data query

### Overview

Out-patient data for calendar years 1997 – 2001 and monthly data from calendar years 2002 and 2003 are obtained from the Standard Ambulatory Data Record (SADR) which is extracted from the Ambulatory Data System (ADS) and the Composite Health Care System (CHCS) used in DoD Military Treatment facilities worldwide. ADS exists primarily as an administrative medical database, but it allows tracking of frequencies, rates, and trends of disease and injury diagnoses in military populations. Each medical record is coded with up to four diagnoses chosen from a list of relevant diagnoses for specific clinics. Clinic staff fill out patient encounter information (including diagnosis) onto forms which are scanned into the ADS database. Only those out-patient records considered complete are processed into DMSS.

Choose the **Detailed Query** button. Choose **Ambulatory Data** from the drop down (see Figure 16).

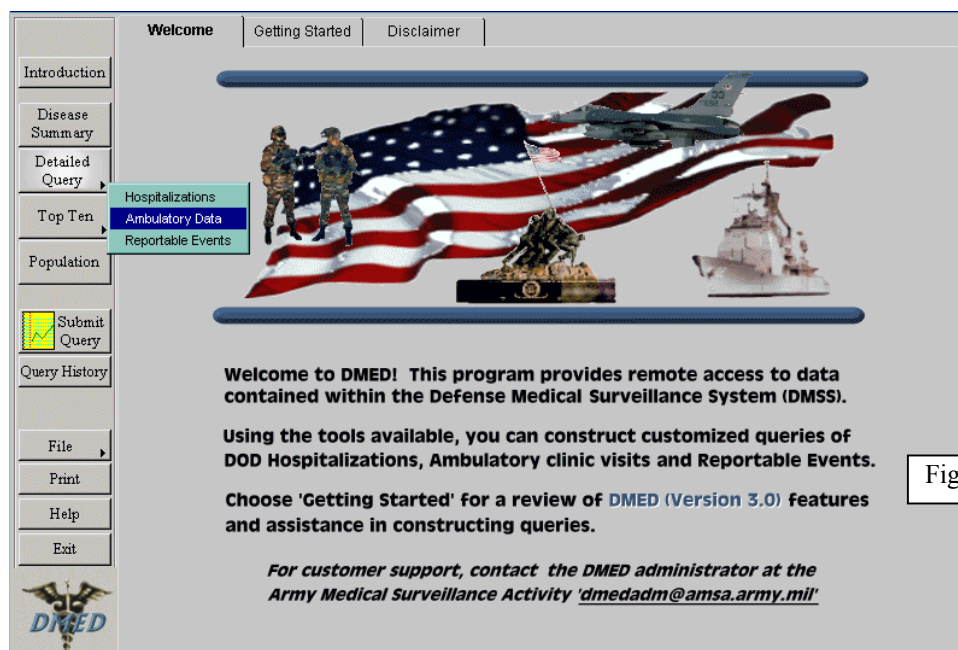


Figure 16.

## Choose diagnosis of interest

The user may select up to 15 ICD-9 code(s) or ranges of codes from the **ICD-9 Explorer** tab. The ICD-9 Explorer is a tree structure of ICD-9 codes.

Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select codes or code ranges by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected Codes** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code.

The ICD-9 Explorer also has a search function enabling you to search by code or text. Type the code or text string you desire in the **Lookup** box on the top of the screen and click on the **Search** button. The desired item will be outlined. Click the left mouse button to select the outlined item. To clear all selections and begin over, click on the **Reset** button.

## Decide which fields to search

Select the Diagnosis Fields to be Search. 'Any Diagnosis' can only be selected with a single ICD-9 code (i.e. a lowest level code that has no subcodes beneath it) (see Figure 17).

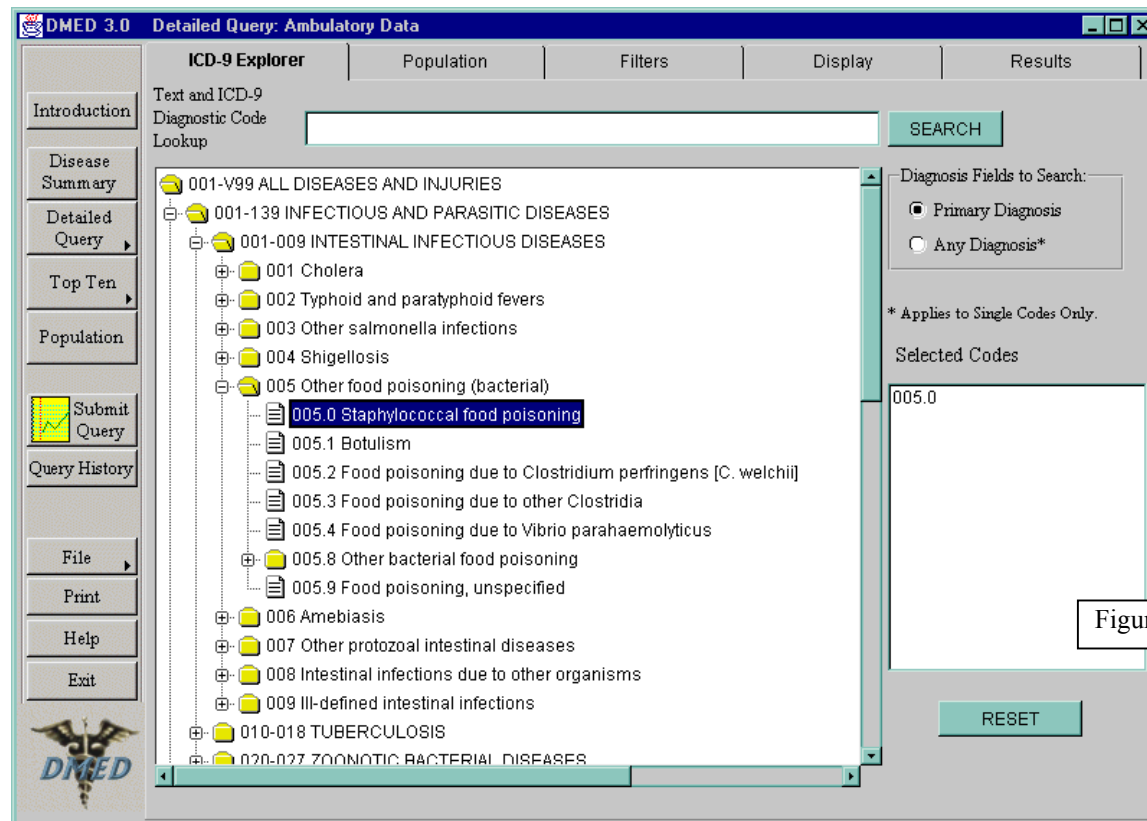


Figure 17.



## Choose population of interest

First, select the **Population** tab. Strata include Service, Gender, Age, Race, Grade, Marital Status and Calendar Year. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item. At least one stratum must be set to **All** and one other must be set to **All** or multiple values (see figure 18).

The screenshot shows the DMED 3.0 Disease Summary window with the Population tab selected. The interface includes a sidebar with navigation options and a main content area with three sections for selection.

**1) Choose Service(s)**

Service	Selection
Army	<input type="checkbox"/>
Navy	<input type="checkbox"/>
Air Force	<input type="checkbox"/>
Marines	<input type="checkbox"/>
All	<input checked="" type="checkbox"/>

**2) Choose Demographics**

Gender	Age	Race	Grade	Marital Status
Male	<20	White	E1-E4	Single
Female	20-24	Black	E5-E9	Married
All	25-29	Other	O1-O3(W1-W3)	Other
	30-34	All	O4-O9(W4-W5)	All
	35-39		All	
	>=40			
	All			

**3.) Time (Current Year or Previous Years)**

Time: ☒ Previous Years ☐ Current Year (counts only)

Calendar Year:

<input type="checkbox"/> 1990	<input type="checkbox"/> 1992	<input type="checkbox"/> 1994	<input type="checkbox"/> 1996	<input type="checkbox"/> 1998	<input checked="" type="checkbox"/> All
<input type="checkbox"/> 1991	<input type="checkbox"/> 1993	<input type="checkbox"/> 1995	<input type="checkbox"/> 1997	<input type="checkbox"/> 1999	

RESET

Figure 18.

## Select filters

First, select the **Filter** tab. The user may select up to five Locations and five Occupations from the **Filter** tab. Both the Location and Occupation explorer are laid out in a tree structure. Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select location or occupation by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code. DMED will default to “All Locations” and “All Occupation Groups” unless otherwise specified. To clear your selections, click on the reset button (see figure 19 on next page...).

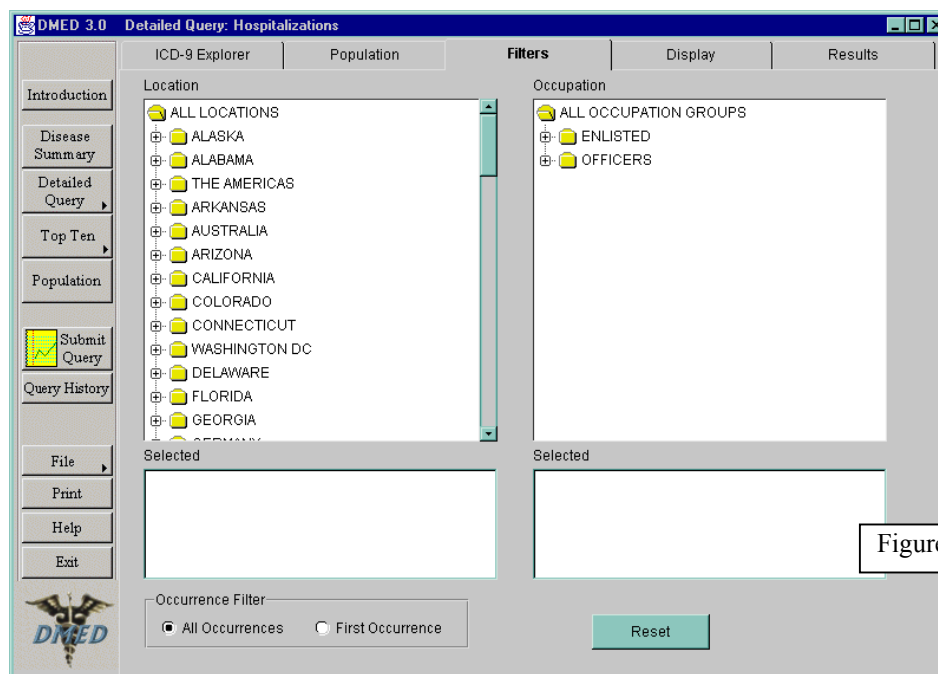


Figure 19.

### Decide first vs. all occurrences

Select 'All Occurrences' or 'First Occurrence'. First Occurrence Rates are calculated using only the first documented hospitalizations for specific conditions of interest (since 1990). Thus, if an individual was hospitalized for the same condition more than once (since 1990), only the first occurrence would be counted. To optimize response times, 'First Occurrence' queries are restricted to single three, four or five digit ICD-9 codes. Thus, ranges of codes and multiple code selections are not allowed.

### Choose display options

First, select the **Display** tab. Next, select the *X*-axis and “*By Value*” variables. The *X*-axis options include all strata for which you selected **All**. Your *By Value* options are any strata for which you selected **All** or multiple values. The same variable cannot be used to define the *X* axis and *By Values*. To set the strata values back to the defaults, click on the **Reset** button. A sample line chart will display the layout of your *X* and *By-value* (see Figure 20 on next page).

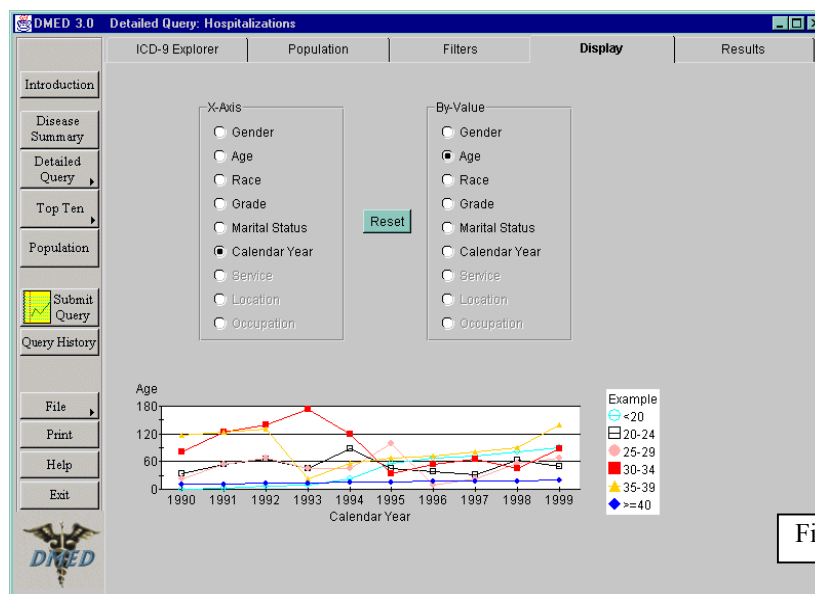


Figure 20.

## Submit Query

Click the **Submit Query** button.

## Results Screen options

The **Results** tab is automatically displayed after a query is submitted.

The **Results** tab contains five sub-tabs (see Figure 21 on next page...).

**Counts** - displays the count of the cases for the population substrata selected. These are the numerators of the rate calculations.

**Person Years** – displays the cumulative person years of experience during the calendar years of interest of all members of the population substrata selected. These are the denominators of the rate calculations.

**Rates** - displays rates of occurrence of cases (rounded to 2 significant digits) for the population substrata selected.

**Line Chart** - graphs the rates in line chart format.

**Bar Chart** - graphs the rates in bar chart format.

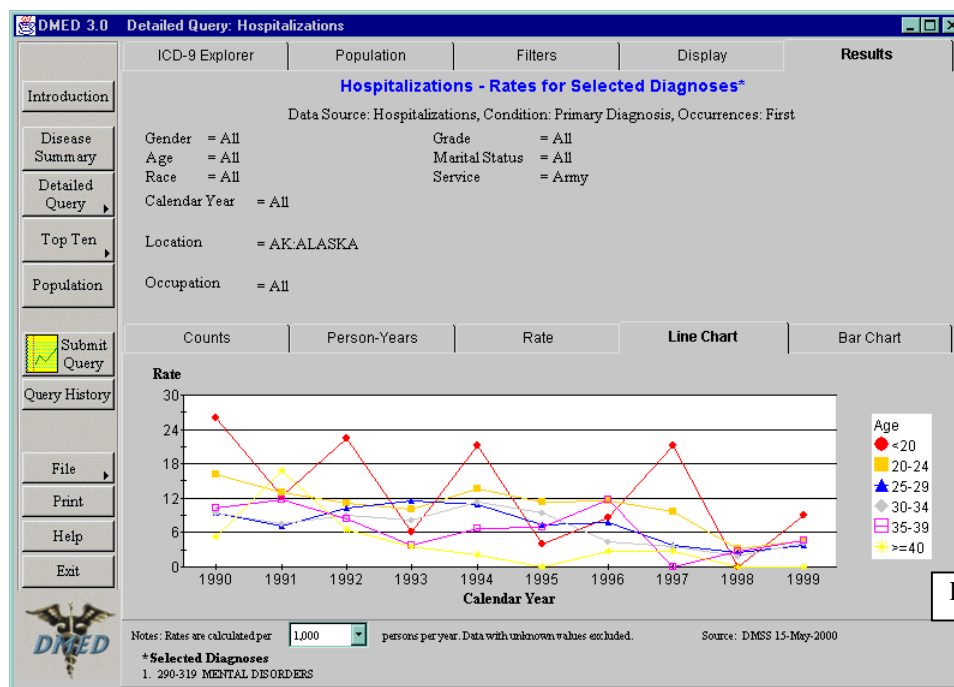


Figure 21.

## Reportable event query

### Overview

Medical events meeting DoD reporting requirements are transmitted within each Service to a central location by Service-specific reporting programs. These programs exist to compile a reportable event surveillance database used to record and track events of interest in the military. Criteria (below) were formulated by each Service to establish a consensus list of DoD reportable events. Currently, Army reportable event data for calendar years 1995 – 2001 and Army, Navy, and Air Force monthly data from calendar years 2002 and 2003 are available in DMSS.

### Criteria for the Selection of Reportable Medical Events

- First, there must be a clear case definition and a single standard code (in the International Classification of Diseases, 9<sup>th</sup> revision);
- Second, an intervention must be available and/or a public health response indicated;
- Third, a sufficient, timely source of information must not already exist; and
- Fourth, the condition/event must --
  - represent an inherent, significant threat to the public's health (e.g., potential to affect large numbers of people, to be efficiently transmitted within a population, to have severe/life threatening clinical manifestations); OR

- represent a significant military operational threat (e.g., potential to disrupt military training, deployment, or operations); OR
- be commonly reportable by state or federal laws, regulations, or guidelines.

Choose the **Detailed Query** button. Choose **Reportable Events** from the drop down (see Figure 22).



Figure 22.

### Choose diagnosis of interest

The user may select up to 15 ICD-9 codes from the **Reportable Events Explorer** tab. The Reportable Events Explorer is a tree structure of ICD-9 codes representing the required reportable events.

Select codes by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected Codes** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code (see Figure 23 on the next page...).

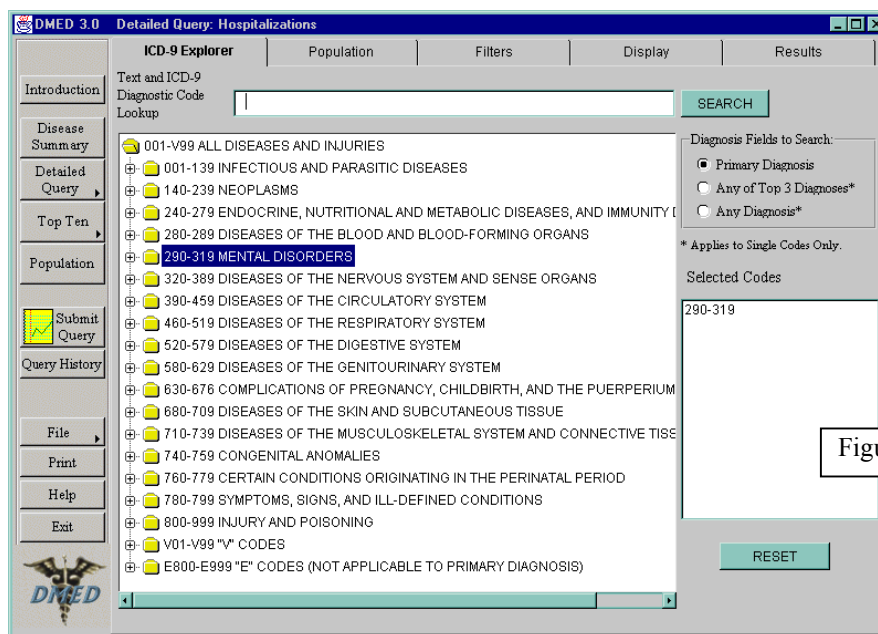


Figure 23.

The Reportable Events Explorer also has a search function enabling you to search by code or text. Type the code or text string you desire in the **Lookup** box on the top of the screen and click on the **Search** button. The desired item will be outlined. Click the left mouse button to select the outlined item. To clear all selections and begin over, click on the **Reset** button.

### Choose population of interest

First, select the **Population** tab. Strata include Service, Gender, Age, Race, Grade, Marital Status and Calendar Year. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item. At least one stratum must be set to **All** and one other must be set to **All** or multiple values (see figure 24).

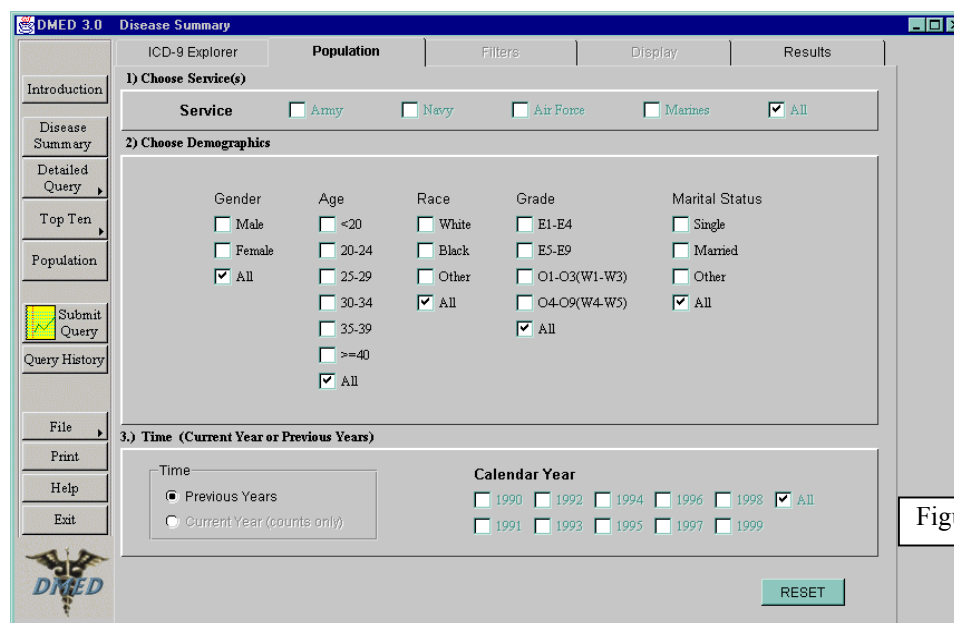


Figure 24.

## Select filters

First, select the **Filter** tab. The user may select up to five Locations and five Occupations from the **Filter** tab. Both the Location and Occupation explorer are laid out in a tree structure. Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select location or occupation by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code. DMED will default to “All Locations” and “All Occupation Groups” unless otherwise specified. To clear your selections, click on the reset button (see Figure 25).

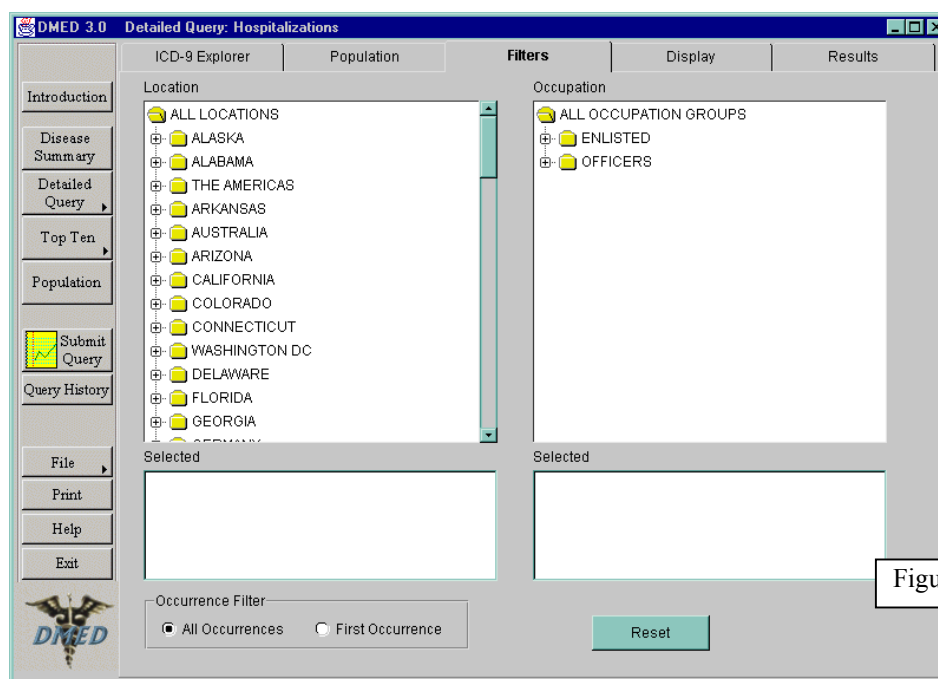


Figure 25.

## Choose display options

First, select the **Display** tab. Next, select the *X*-axis and “*By Value*” variables. The *X*-axis options include all strata for which you selected **All**. Your *By Value* options are any strata for which you selected **All** or multiple values. The same variable cannot be used to define the *X* axis and *By Values*. To set the strata values back to the defaults, click on the **Reset** button. A sample line chart will display the layout of your *X* and *By-value* (see Figure 26 on next page).

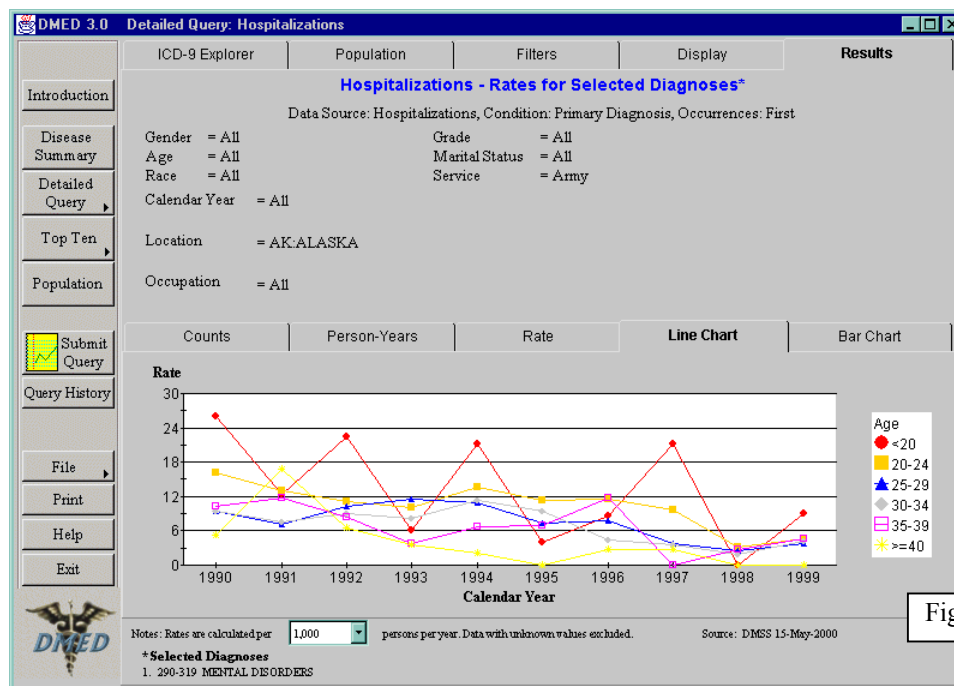


Figure 26.

## Submit Query

Click the **Submit Query** button.

## Results Screen options

The Results tab is automatically displayed after a query is submitted.

The Results tab contains five sub-tabs (see Figure 27 on next page...):



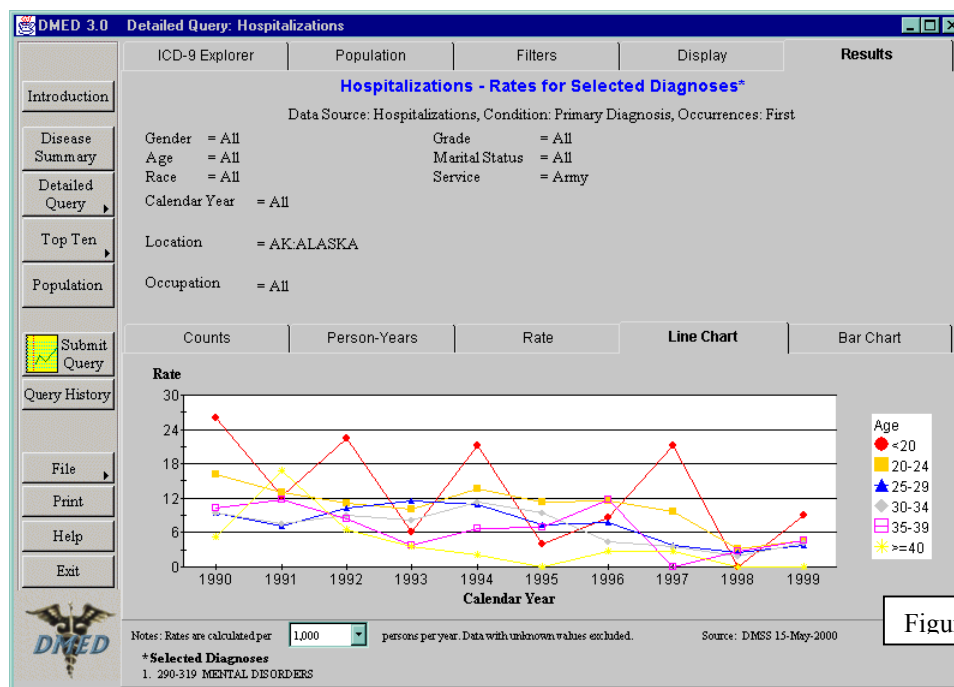


Figure 27.

**Counts** - displays the count of the reported cases for the population substrata selected. These are the numerators of the rate calculations.

**Person Years** – displays the cumulative person years of experience during the calendar years of interest of all members of the population substrata selected. These are the denominators of the rate calculations.

**Rates** - displays rates of occurrence of cases (rounded to 2 significant digits) for the population substrata selected.

**Line Chart** - graphs the rates in line chart format.

**Bar Chart** - graphs the rates in bar chart format.

## Top Ten Query

### Overview

The Top Ten query displays the ten most commonly occurring conditions for specified populations. ICD-9 codes for this query are specified at the 3-digit ICD-9 level only. Since the user does not select specific diagnoses, the ICD-9 and Reportable Events Explorer Tabs are not available for this kind of query. The following steps are necessary to perform a Top Ten Diagnoses query.

Choose the **Top Ten** button on the left side of the screen. Choose the data of interest: Hospitalizations, Ambulatory Data or Reportable Events (see Figure 28).

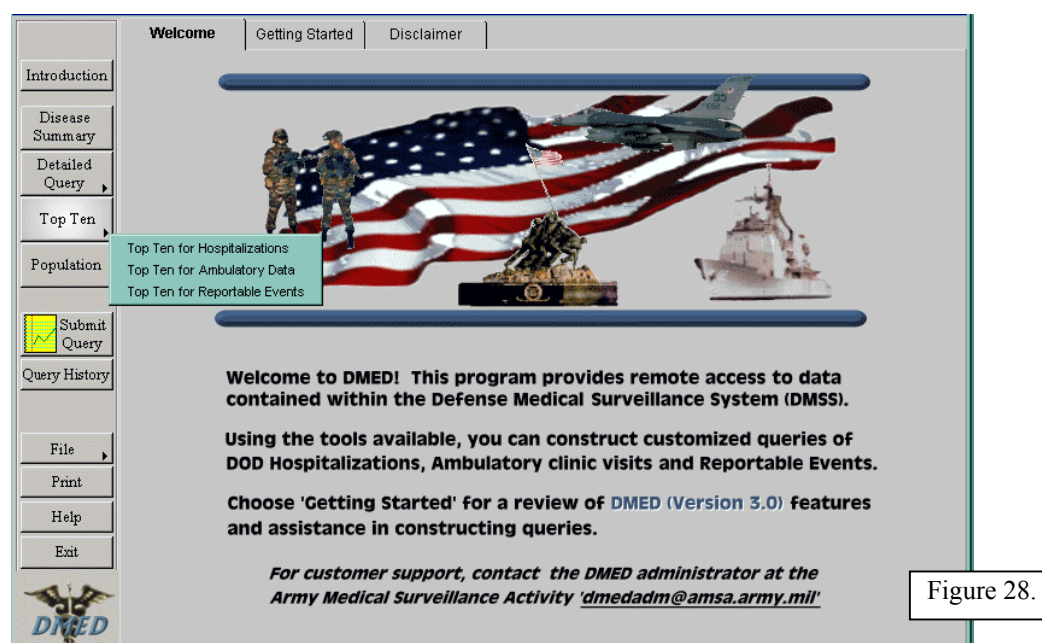


Figure 28.

### Hospitalization data query

#### Choose population of interest

First, select the **Population** tab. Strata include Service, Gender, Age, Race, Grade, Marital Status and Calendar Year. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item. At least one stratum must be set to **All** and one other must be set to **All** or multiple values.

#### Submit Query

Click the **Submit Query** button.

## Results Screen

Top Ten Query results are displayed in tabular format only (see Figure 29).

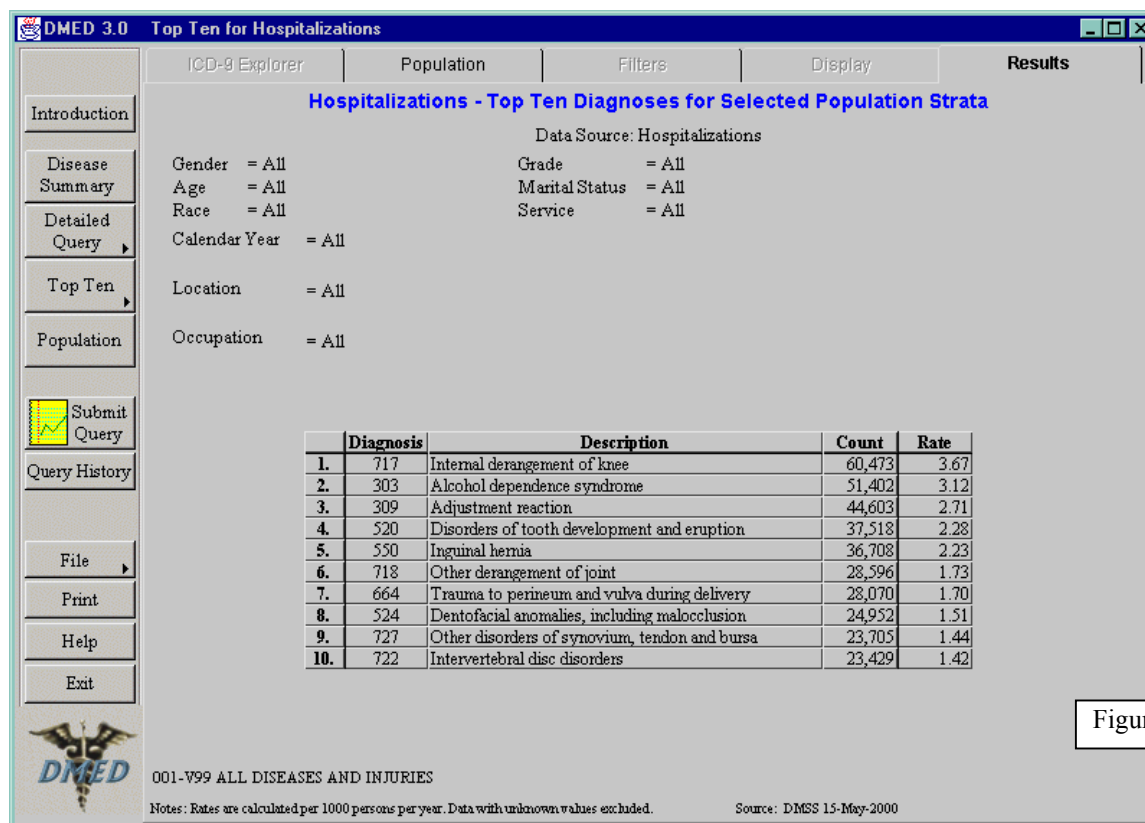


Figure 29.

## Ambulatory Data query

### Choose population of interest

The **Population** tab is automatically selected. Strata include Service, Gender, Age, Race, Grade, Marital Status and Calendar Year. By default, all strata are selected when you enter this tab. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item (See figure 30).

DMED 3.0 Top Ten for Ambulatory Data

ICD-9 Explorer Population Filters Display Results

1) Choose Service(s)

Service ☐ Army ☐ Navy ☐ Air Force ☐ Marines ☒ All

2) Choose Demographics

Gender	Age	Race	Grade	Marital Status
<input type="checkbox"/> Male	<input type="checkbox"/> <20	<input type="checkbox"/> White	<input type="checkbox"/> E1-E4	<input type="checkbox"/> Single
<input type="checkbox"/> Female	<input type="checkbox"/> 20-24	<input type="checkbox"/> Black	<input type="checkbox"/> E5-E9	<input type="checkbox"/> Married
<input checked="" type="checkbox"/> All	<input type="checkbox"/> 25-29	<input type="checkbox"/> Other	<input type="checkbox"/> O1-O3(W1-W3)	<input type="checkbox"/> Other
	<input type="checkbox"/> 30-34	<input checked="" type="checkbox"/> All	<input type="checkbox"/> O4-O9(W4-W5)	<input checked="" type="checkbox"/> All
	<input type="checkbox"/> 35-39		<input checked="" type="checkbox"/> All	
	<input type="checkbox"/> >=40			
	<input checked="" type="checkbox"/> All			

3.) Time (Current Year or Previous Years)

Time ☒ Previous Years ☐ Current Year (counts only)

Calendar Year ☐ 1997 ☐ 1999 ☐ 1998 ☒ All

RESET

Figure 30.

### Select filters

First, select the **Filter** tab. The user may select up to five Locations and five Occupations from the **Filter** tab. Both the Location and Occupation explorer are laid out in a tree structure. Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select location or occupation by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code. DMED will default to “All Locations” and “All Occupation Groups” unless otherwise specified. To clear your selections, click on the reset button (see Figure 31 on next page...).

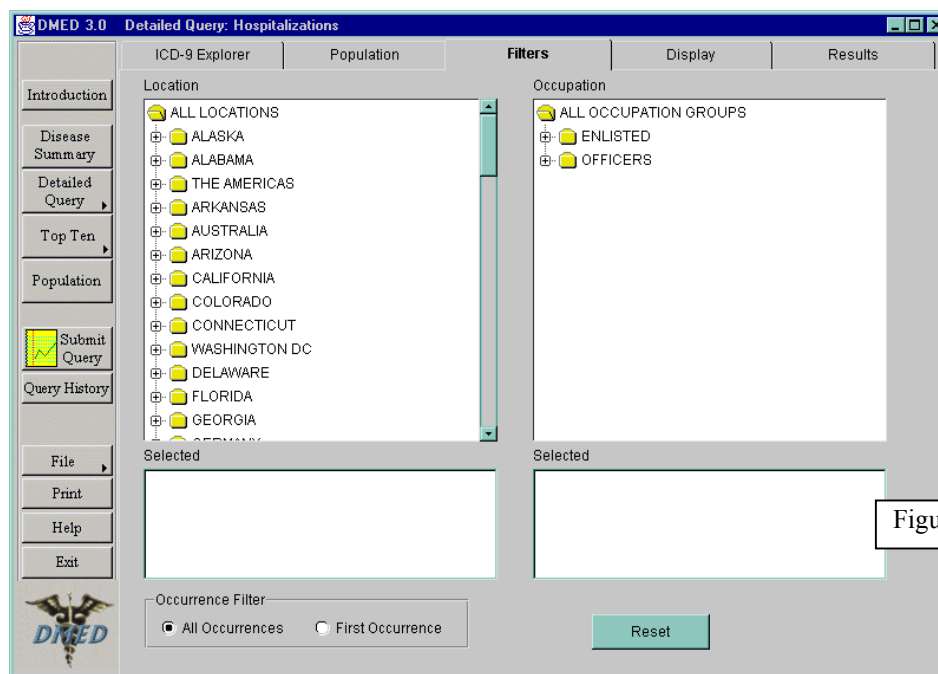


Figure 31.

### Choose display options

First, select the **Display** tab. Next, select the *X-axis* and “*By Value*” variables. The *X-axis* options include all strata for which you selected **All**. Your *By Value* options are any strata for which you selected **All** or multiple values. The same variable cannot be used to define the X axis and By Values. To set the strata values back to the defaults, click on the **Reset** button. A sample line chart will display the layout of your X and By-value (see Figure 32).

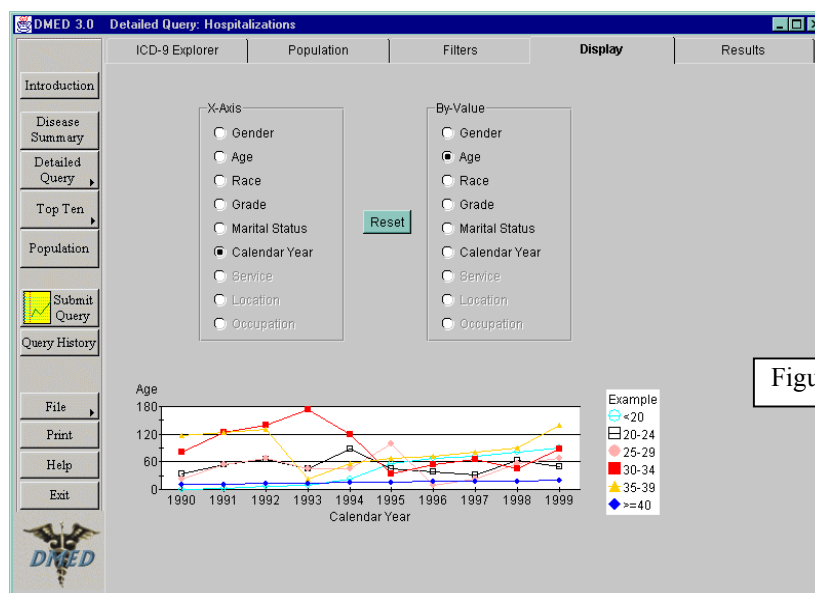


Figure 32.

## Submit Query

Click the **Submit Query** button.

## Results Screen

Top Ten Query results are displayed in tabular format only (see Figure 33).

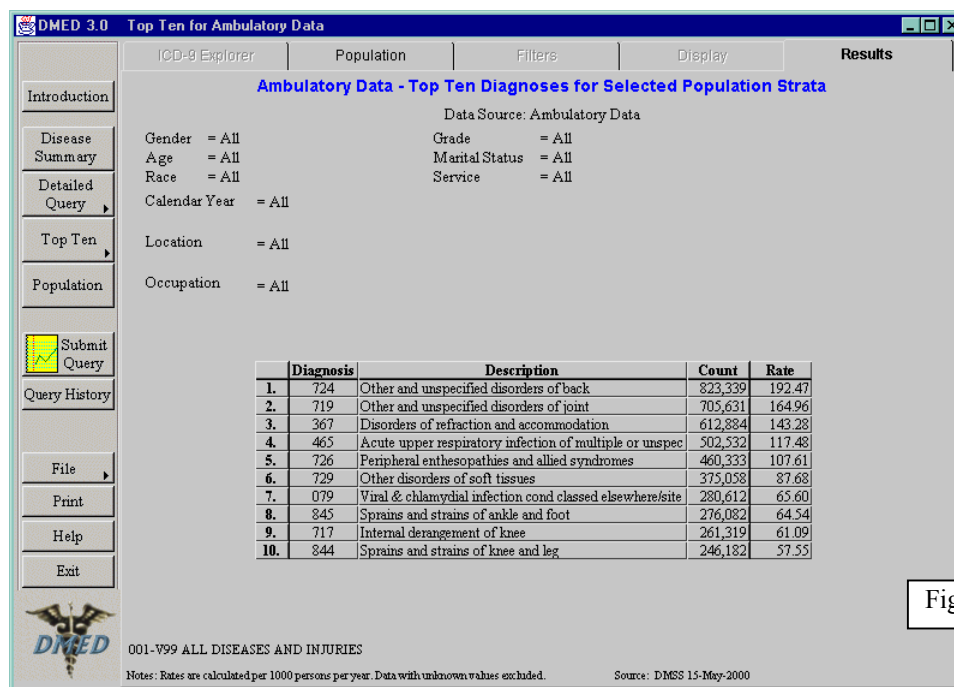


Figure 33.

## Reportable event query

### Choose population of interest

The **Population** tab is automatically selected. Strata include Service, Gender, Age, Race, Grade, Marital Status and Calendar Year. Within a stratum, you may select one, all or any combination of values by clicking the check box next to each desired item (see Figure 34 on next page...).

DMED 3.0 Top Ten for Reportable Events

Reportable Events | Population | Filters | Display | Results

1) Choose Service(s)

Service ☐ Army ☐ Navy ☐ Air Force ☐ Marines ☒ All

2) Choose Demographics

Gender	Age	Race	Grade	Marital Status
<input type="checkbox"/> Male	<input type="checkbox"/> <20	<input type="checkbox"/> White	<input type="checkbox"/> E1-E4	<input type="checkbox"/> Single
<input type="checkbox"/> Female	<input type="checkbox"/> 20-24	<input type="checkbox"/> Black	<input type="checkbox"/> E5-E9	<input type="checkbox"/> Married
<input checked="" type="checkbox"/> All	<input type="checkbox"/> 25-29	<input type="checkbox"/> Other	<input type="checkbox"/> O1-O3(W1-W3)	<input type="checkbox"/> Other
	<input type="checkbox"/> 30-34	<input checked="" type="checkbox"/> All	<input type="checkbox"/> O4-O9(W4-W5)	<input checked="" type="checkbox"/> All
	<input type="checkbox"/> 35-39		<input checked="" type="checkbox"/> All	
	<input type="checkbox"/> >=40			
	<input checked="" type="checkbox"/> All			

3.) Time (Current Year or Previous Years)

Time ☒ Previous Years ☐ Current Year (counts only)

Calendar Year ☐ 1995 ☐ 1997 ☐ 1999 ☐ 1996 ☐ 1998 ☒ All

RESET

Figure 34.

## Select filters

First, select the **Filter** tab. The user may select up to five Locations and five Occupations from the **Filter** tab. Both the Location and Occupation explorer are laid out in a tree structure. Clicking on the + sign next to a displayed range expands the display to show the next level of detail. Select location or occupation by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code. DMED will default to “All Locations” and “All Occupation Groups” unless otherwise specified. To clear your selections, click on the reset button (see Figure 35 on next page...).

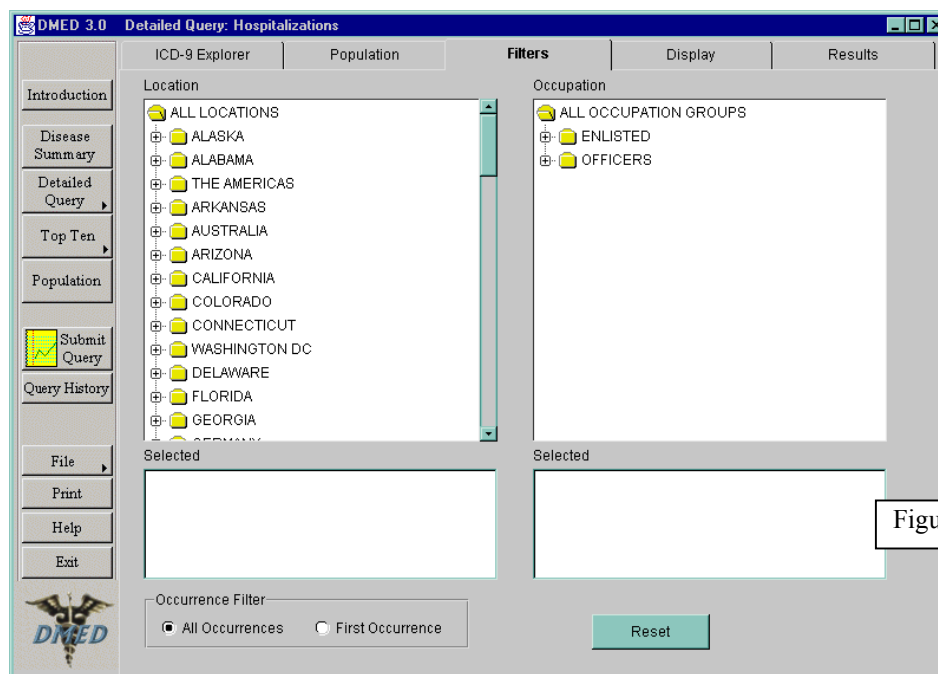


Figure 35.

### Choose display options

First, select the **Display** tab. Next, select the *X-axis* and “*By Value*” variables. The *X-axis* options include all strata for which you selected **All**. Your *By Value* options are any strata for which you selected **All** or multiple values. The same variable cannot be used to define the X axis and By Values. To set the strata values back to the defaults, click on the **Reset** button. A sample line chart will display the layout of your X and By-value (see Figure 36).

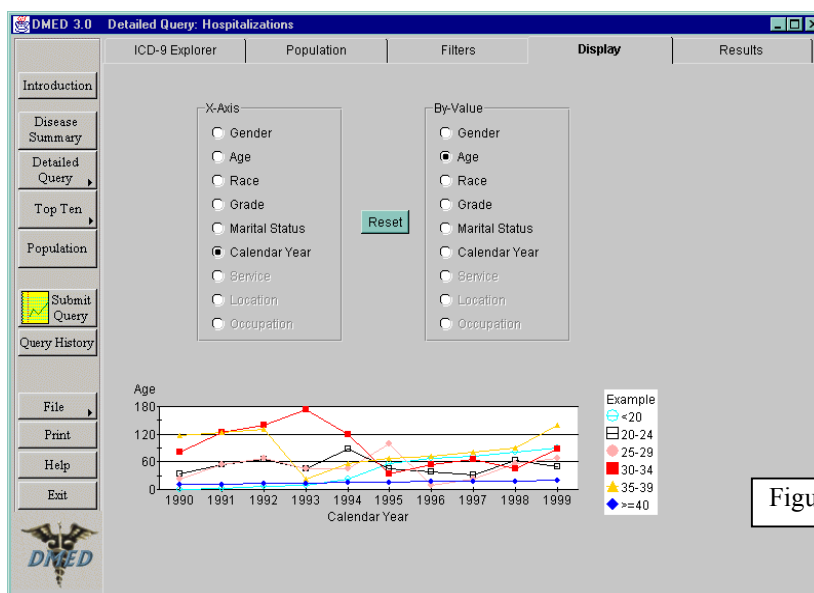


Figure 36.



## Submit Query

Click the **Submit Query** button.

## Result Screen

Top Ten Query results are displayed in tabular format only (see Figure 37).

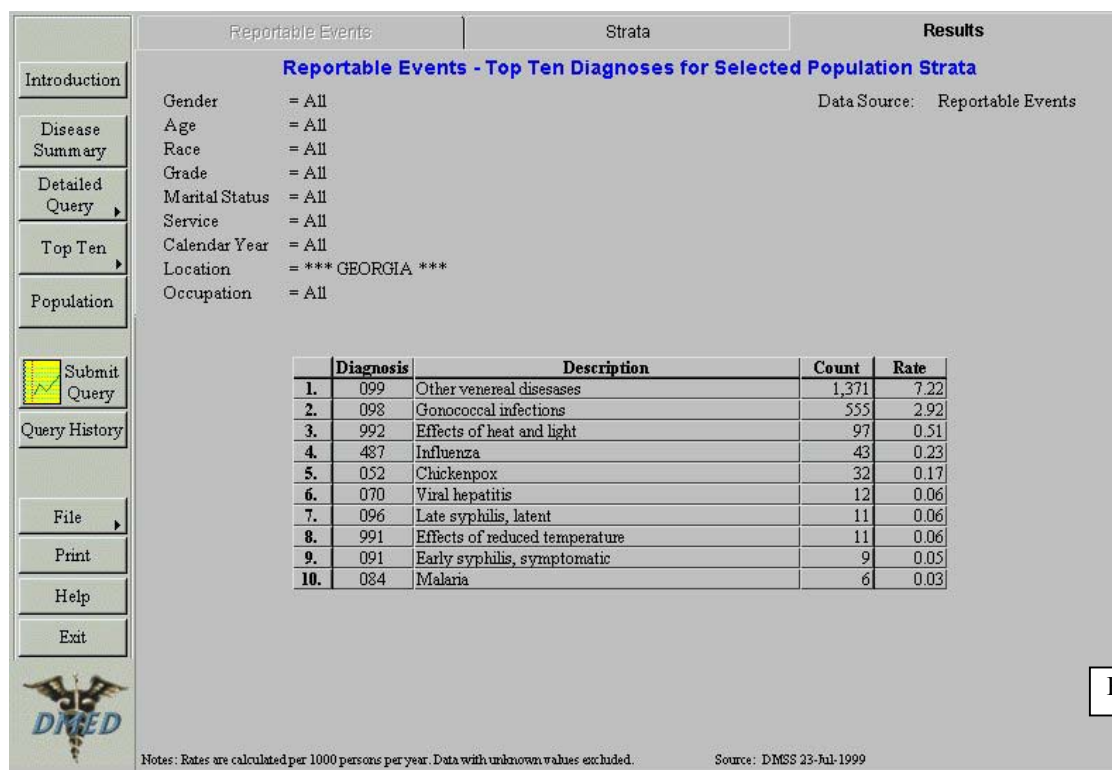


Figure 37.

## Additional Features

### Population Statistics

DMED also allows queries on population statistics (the total number of person years documented in the database for the population specified). No diagnosis information is included in these figures.

To obtain population statistics:

1. Select the **Population** button.
2. The DMED will automatically go to the **Population** tab. Click on the check box next to the population you wish to study (see Figure 38). Select desired Location and Occupational Group from the **Filter** tab.

DMED 3.0 Population Statistics

ICD-9 Explorer   **Population**   Filters   Display   Results

1) Choose Service(s)

Service   ☐ Army   ☐ Navy   ☐ Air Force   ☐ Marines   ☒ All

2) Choose Demographics

Gender	Age	Race	Grade	Marital Status
<input type="checkbox"/> Male	<input type="checkbox"/> <20	<input type="checkbox"/> White	<input type="checkbox"/> E1-E4	<input type="checkbox"/> Single
<input type="checkbox"/> Female	<input type="checkbox"/> 20-24	<input type="checkbox"/> Black	<input type="checkbox"/> E5-E9	<input type="checkbox"/> Married
<input checked="" type="checkbox"/> All	<input type="checkbox"/> 25-29	<input type="checkbox"/> Other	<input type="checkbox"/> O1-O3(W1-W3)	<input type="checkbox"/> Other
	<input type="checkbox"/> 30-34	<input checked="" type="checkbox"/> All	<input type="checkbox"/> O4-O9(W4-W5)	<input checked="" type="checkbox"/> All
	<input type="checkbox"/> 35-39		<input checked="" type="checkbox"/> All	
	<input type="checkbox"/> >=40			
	<input checked="" type="checkbox"/> All			

3.) Time (Current Year or Previous Years)

Time

☒ Previous Years   ☐ Current Year (counts only)

Calendar Year

<input type="checkbox"/> 1990	<input type="checkbox"/> 1992	<input type="checkbox"/> 1994	<input type="checkbox"/> 1996	<input type="checkbox"/> 1998	<input checked="" type="checkbox"/> All
<input type="checkbox"/> 1991	<input type="checkbox"/> 1993	<input type="checkbox"/> 1995	<input type="checkbox"/> 1997	<input type="checkbox"/> 1999	

RESET

Figure 38.

3. Select the **Submit Query** button.
4. Query results will be displayed on the **Results** tab in table format (see Figure 39).

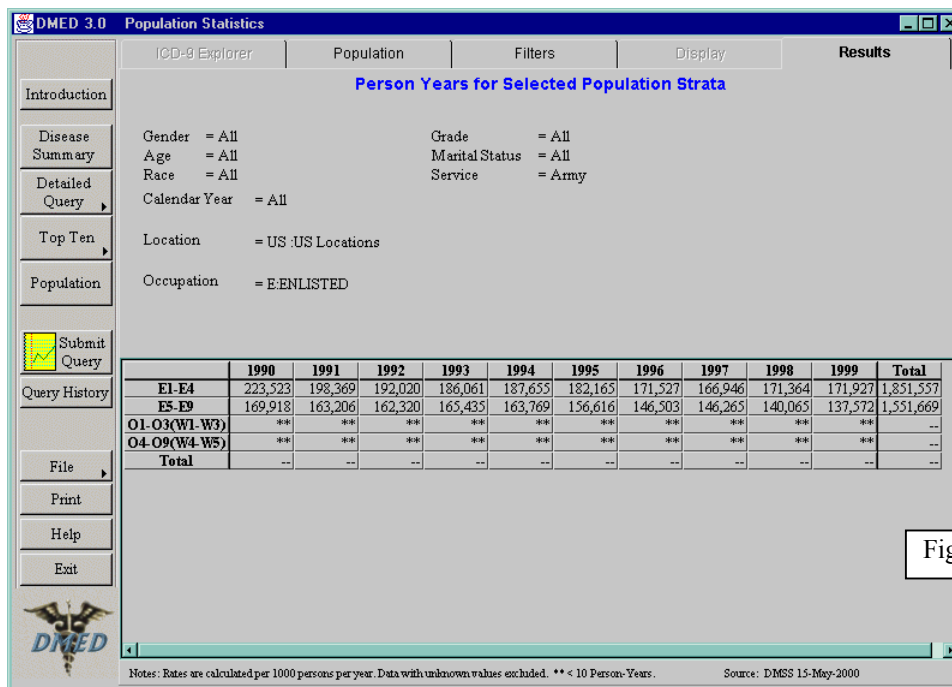


Figure 39.

## **File / Print Options**

### Opening queries

To open a previously saved query: choose the **File** button then choose **Open** from the drop down. When this option is selected, a file panel listing all saved queries appears. When the desired query is selected, the **ICD-9/Reportable Events Explorer, Population, Filter** and **Results** tabs are set to the saved values.

### Saving queries

To save a query: choose the **File** button then choose **Save** from the drop down. When this option is selected, a file panel appears allowing you to select the directory in which to save the query file.

### Exporting Data

To export the results of a query to a tab-delimited ASCII text file: choose the **File** button then choose **Export** from the drop down. This file is easily migrated into commonly used spreadsheet programs (e.g. Excel) for further analysis, graphing and printing. When this option is selected, a file panel appears allowing you to select the directory in which to save the query results file.

### **Printing results**

Choose the **Print** button to print results screens. Choose landscape mode to view the entire printout.